CASE REPORTS

Schwannoma of the Stomach

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ASKANAZY is believed to be the first to describe an isolated neurofibroma of the stomach. More recently sporadic reports have appeared describing occasional cases and in 1948 West and Knox published experience with six cases of neurofibroma of the stomach and included a report of one case each of neurogenic sarcoma and leiomyoma. Their report did not state the incidence these six cases represented, but from the chronological aspect (1932-1948) it is considerably more than it was previously believed to be.

Statistics from the large surgical centers of this country and individual reviews of the literature generally agree that of all neoplasms involving the stomach, about 0.5 per cent to 2 per cent are of benign nature; and of the benign tumors of the stomach, about 5 to 10 per cent are neurofibromas. There have been several reports claiming a much higher incidence, but those reports included postmortem findings of benign tumors of the stomach which were asymptomatic during life and probably would have remained so had the patient lived. They were purely coincidental findings.

The reasons for considering a pathological entity which occurs so infrequently are, as enumerated by Kiefer: (1) the severity of the resulting symptoms; (2) the uniformly successful outcome with proper treatment, and (3) the possibility that malignant change may occur.

A classification of benign tumors of the stomach on an anatomical basis has been proposed by Carli. He enumerated four types: (1) those arising from the mucosal elements, such as polyps and adenomas, (2) those arising in the areolar tissues of the submucosal layer, such as lipomas, fibromas, angiomas, etc., (3) those that arise from the muscle layer and which constitute by far the greatest number of benign tumors, the leiomyomas, and (4) tumors originating in nerve elements of the stomach. This classification may serve to keep the possibilities of benign stomach tumors in mind, and for the sake of completeness, a fifth classification might be added—ectopic pancreatic tissue.

For some time there has been controversy over the pathological details of neurofibromas. It is generally agreed that they arise from the nerve sheath, but the exact component of the sheath is a controversial subject. Verocay, Masson, Stout, Willius and Laird have expressed belief that they originate in the ectodermally derived sheath of Schwann, and consequently they have used the term schwannoma for these tumors. Penfield held that the mesodermally derived epineurium or perineurium is the site of origin and he used the words neurofibroma and perineural fibroblastoma to describe the lesions. The term neurinoma, meaning nerve fiber tumor, which was introduced in 1910 by Verocay, seems inappropriate. Regardless of the nomenclature, the tumors in question usually are composed of fibrous tissue cells primarily and contain varying amounts of fragmental nerve fibers which require special stains to demonstrate. The nuclei of the fibrous tissue cells frequently are arranged in vertical rows, giving rise to the so-called "palisade" formation or regimentation which is the characteristic structural feature of neurofibroma.

In some cases this palisade formation is absent or is present only to a small degree, the nerve elements are more prominent and myxomatous changes are present in varying degree. Such tumors are thought to be more liable to undergo malignant degeneration.

The neurilemma or Schwann's sheath is a nonelastic, delicate membrane composed of cells that, like the links of a chain, enclose the axis cylinder throughout its length. The Schwann cells are of ectodermal origin and arise chiefly from the embryonic cells of Schwann or Lenhossek's lemmoblasts of the neural crest. The peripheral nerves are composed of fascicles of nerve fibers held together by connective tissue divided into endoneurium, epineurium and perineurium. Thus the neurofibroma may be derived from the sheath of Schwann or the neurilemma, or from the connective tissue of endoneurium, epineurium or perineurium, or from a mixture of the two elements. Tumors that are made up principally of Schwann cells are best termed schwannomas or neurilemmomas.

Grossly, the schwannoma is well circumscribed and, on cut section, stands out sharply from the surrounding tissue. Most such tumors are round or oval, pinkish-gray, of uniform texture and of soft to moderately firm consistency. Microscopically observed, they are described as fasciculated, reticular and epithelioid, with the three patterns not always sharply separated.

The nerve elements of the stomach are composed of the fibers of the vagus and the sympathetic nerves and the intrinsic plexuses of Auerbach (subserous) and Meissner (submucous). It is not known whether neurofibroma of the stomach shows any predilection for one or the other of the groups of nerves. Peripheral neurofibromas seldom affect the motor or sensory functions of the nerves involved, and judging by the low incidence of physiologic disturbance it would appear that the same is true of neurofibromas in the stomach.

The symptoms of neurofibroma of the stomach are due to mechanical effects. The most common symptom is hemorrhage, which may be severe. It usually begins without additional symptoms and is associated with clinical signs of exsanguination. Pallor, weakness, fainting, and tarry stools may be noted, all without simultaneous abdominal pain. Obstruction due to a ball valve action of the tumor dropping through the pylorus has also been described. In addition to these mechanical difficulties, in most cases there is history of vague anorexia, loss of weight and abdominal fullness for some time prior to the onset of more definite symptoms.

X-ray examination or gastroscopy usually is necessary to establish the diagnosis, but suspicion should be aroused by

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a history of massive hemorrhage occurring on several occasions over a long period of time with no progression to cachexia or appearance of other diagnostic symptoms and signs. In most cases a filling defect can be observed in roentgen studies, and the benign nature of the tumor is suggested by the lack of induration of the wall of the stomach adjacent to the base of the tumor and by the fact that there is normal motility in the stomach wall up to the edge of the tumor-involved area.

The radiological findings in the case of schwannoma of the stomach observed by the authors and reported herein were similar, if not identical, to those associated with other benign tumors. There is no true diagnostic or differentiating point. The benign tumors, in general, appear as a well-defined sessile or pedunculated, rounded mass projecting into the lumen of the stomach. They may be as small as a small polyp or papilloma or so large as to fill the entire gastric lumen. Usually there is no disturbance in gastric motility and no invasion of the stomach wall. However, at times, the size and position of the tumor may be such as to cause partial pyloric obstruction. In the case of the larger tumors, an ulcer crater is frequently present at the apex of the mass. Perier, in a report of three cases of schwannoma of the stomach, described roentgenologic findings the same as those noted in the case reported herein, but added that similar findings may also be present in connection with leiomyomas. It is impossible to determine precisely the kind of lesion on the basis of roentgen evidence.

As benign tumors of the stomach may undergo malignant degeneration which is not at first detectable radiologically, operative intervention may not safely be delayed. The treatment, once the distressing symptoms are controlled, is excision. This may be a localized procedure, or, if there is question of malignant change, more radical stomach resection.

CASE REPORT

A 61-year-old white male entered the hospital Dec. 4, 1949, with complaint of tarry stools and weakness and fainting for three days. The body weight of the patient had decreased by 35 pounds in the preceding five years, but anorexia was not noted. Except for pallor, no abnormalities were observed in physical examination. The blood pressure was 100 mm. of mercury systolic and 50 mm. diastolic and the pulse rate was 120 per minute. The patient was treated supportively and several blood transfusions were given. When sufficient recovery had occurred, roentgen studies of the stomach were carried out. A large, intraluminal mass arising from the mid-portion of the lesser curvature was observed. The radiologic diagnosis was leiomyoma with ulceration of the tumor mass. Diverticulum of the duodenum was also noted. Results of gastric analysis were within normal limits of acidity. Seventeen days after the patient was admitted, the growth was removed en bloc by subtotal resection.

The resected segment of stomach was annular, 16 cm. at the greatest diameter. The stomach wall contained a submucosal and circumscribed, gray, rather soft nodule 3 cm. in diameter. A covering of ulcerated mucosa was observed in microscopic examination of a section of the tumor mass which lay in the mid-portion of the greater curvature of the stomach on the anterior side. The ulcer was covered with granulation tissue which rested on the large nodule in the stomach wall. The mucosa at the ulcer margin was of normal appearance. The tumor mass was made up of elongated cellular fibers with pronounced palisading and regimentation of the nuclei. The nuclei were elongated with tapering ends, had vesicular chromatin patterns, and approximated each other in size. There was a clear zone of cytoplasm at both poles of the cells. In the space between the regimented nuclei there was a loose arrangement of connective tissue cells with round, oval and elongated nuclei. The tissue was cellular throughout, but no malignant changes were observed. The pathologic diagnosis was neurilemmoma (schwannoma of the stomach), with chronic ulcer over the neurilemmoma.

The patient recovered and was discharbed on the eighth postoperative day.

SUMMARY

A case of schwannoma of the stomach with overlying gastric ulcers is reported. The tumor was removed by subtotal resection and the patient recovered.

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REFERENCES

Askanazy: Cited by Willius.

Kiefer, E. D.: Benign tumors of the stomach, S. Clin. N. Amer., 21:711, June 1941.

Laird, W. R., and Nolan, L. E.: Significance of schwannomas, Am. J. of Surg., 61:418-420, Sept. 1943.

Masson, P., Experimental and spontaneous schwannomas, Am. J. Path., 8:367-389, July 1932.

Perier, E. A.: Schwannoma of the stomach, Presse Med., 53:134-135, March 17, 1945.

Stout, A. P.: The peripheral manifestations of the specific nerve sheath tumor (neurilemmoma), Am. J. Cancer, 24:751, Aug. 1935.

Verocay: Cited by Willius.

West, J. P., and Knox, G.: Neurogenic tumors of the stomach, Surgery, 23:450, March 1948.

Willius, R. A.: Pathology of Tumours, pp. 828-835, Butterworth & Co., Ltd., London, 1948.

Skin Granuloma Following Laceration by a Fluorescent Lamp

Report of a Case

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SKIN lesions associated with exposure to beryllium compounds have been described mainly in conjunction with reports of pulmonary lesions found in industrial workers exposed to these compounds.[5, 12] Recent descriptions of subcutaneous granulomas at the sites of skin lacerations with fluorescent lamp fragments carry the problem, in some measure, from the industrial plant into the office and home. Seven such cases have been reported.[1, 6, 9, 10] Although the use of beryllium silicate, the offending substance, is presumably being discontinued by most manufacturers, the lamps in current use and in stock will present a danger for some time to come.[13]

CASE REPORT

In September 1948 a white 7-year-old boy received a single laceration approximately 1 cm. in length over the dorsal aspect of the proximal interphalangeal joint of the left middle finger from a broken fluorescent lamp. Treatment consisted of mercurochrome, applied at the time of injury; boric soaks, advised one week later when mild cellulitis was observed; and, when a moderate painless swelling occurred, a five-day period of penicillin therapy, warm compresses and bed rest. In spite of active treatment the lacerated area became progressively indurated, and by December 1948 a thickened, reddish, slightly tender granulomatous lesion had developed which intermittently exuded small amounts of thin, clear fluid (Figure 1).

Intradermal tuberculin and coccidioidin tests (each 1:1000) elicited negative reactions. The blood serum gave a negative

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